

BRAYNES, S.N.

Result of artificial sleep in a biological experiment. Zh. vysshei
nerv. deiat. 2 no. 3:381-387 May-June 1952. (GLML 23:3)

1. Laboratory of Pathobiology of the Institute of Experimental Biology
of the Academy of Medical Sciences USSR.

BRAYNESS, S.N.

USSR/Pharmacology - Toxicology, Aminoacid Compounds.

U-7

Abs Jour : Ref Zhur - Biol., No 3, 1958, 13061

Author : Brayness, S.N., Skuin', E.Ya., Stanishevskaya, N.N.

Inst :

Title : A Trial of Methionine in the Treatment of Schizophrenia

Orig Pub : V kn.: Tr. Konferentsii po prouzvodstvu i ispol'zovaniyu
aminokislot v med. M., MGU, 1956, 79-88.

Abstract : No abstract.

Card 1/1

Country : USSR
Category: Human and Animal Physiology. Nervous System.
Higher Nervous Activity. Behavior.

T

Abs Jour: RZhBiol., No 19, 1958, 89253

Author : ~~Braynes, S.N.~~

Inst : -

Title : An Attempt at Experimental Biological Study of
Schizophrenia

Orig Pub: V sb.; Vopr. psikhatrii. Vyp. 2. M., 1957,
23-29

Abstract: In experimental catatonia (EC), produced by ad-
ministration to rats of lysergic acid, disturbances
of a complicated conditioned motor reflex in the
labyrinth were observed. A correlation was estab-
lished between the rate of elaboration of the motor

Card : 1/2

T-116

Country : USSR
Category: Human and Animal Physiology. Nervous System.
Higher Nervous Activity. Behavior.

T

Abs Jour: RZhBiol., No 19, 1958, 89253

reaction and the rate of its re-establishment following suppression of EC. Disorders of the structure of the respiratory cycle during EC were demonstrated in rats, dogs and Capuchin Monkeys. The blood plasma proteins during EC differed from normal in relation to the intramolecular energy of the protein molecules. Irradiation of the rats led to a decrease of the duration and increase of the time of the onset of EC. The preparation Co (neopergepar) decreased the symptoms of EC in the animals and exerted a positive action on the psychic and somatic condition of schizophrenic patients. -- K.S. Ratner

Card : 2/2

BRAYNES, S.N.

Report presented at the Moscow University Seminar on Cybernetics during 1958-59 school year. (under direction of A. A. Lurkovskiy) (reprinted in Problemy kibernetiki, No. 3, 1960, p. 273)

- R. N. Tsyt'yan, Second International Congress on Cybernetics (3 March 1958) contents of the paper were published in the second issue of Problemy kibernetiki in the "Reviews" section.
- Discussion of L. A. Polstov's book Sluzhba (17 October 1958).
- S. S. Braynes and O. Ya. Khorikalyan, Investigation of the Physiological Mechanism of a Complex Reflex in Mice Under Labyrinth Conditions (31 October 1958).
- A. M. Piskunov, Report on the Mission to the USSR (16 November 1958).
- A. A. Lavrovskiy and S. V. Tikhonov, Problem of the Systematization of the Basic Concepts of Cybernetics (28 November 1958).
- A. M. Zhurav, Conference on Automation in Railroad Transportation (12 December 1958).
- M. A. Shvachkin, Means of Developing the Structure of Computers (26 December 1958).
- A. P. Terent'ev, Report on the Cybernetics Symposium in London (26 December 1958).
- M. G. Gerasimov, Certain Problems of the Behavior of Living Organisms (13 February 1959).
- S. Ya. Khorikalyan, Cybernetic Problems in Economics (27 February 1959).
- D. I. Volynskiy, The Basis of Technical Forms of Weight and Speed of River Craft with the Aid of Electronic Digital Computers (13 March 1959).
- O. V. Savitskiy, Electrical Stimulation of Certain Self-Adaptive Systems (10 April 1959; a part will be published in Problemy kibernetiki, No. 4).
- A. A. Lavrovskiy, O. I. Rudakovskiy, and T. S. Molodtsovskiy, Report on the Leningrad Conference on Mathematical Linguistics (28 April 1959, et al., pp. 273-278 of this book).

SOV-25-58-9-11/62

AUTHOR: Braynes, S.H., Doctor of Medical Sciences, Professor

TITLE: Sleep Prolongs Life (Son prodlevayet zhizn')

PERIODICAL: Nauka i zhizn', 1958, Nr 9, pp 24-26 (USSR)

ABSTRACT: The author describes experiments with an old dog, the life of which was to be prolonged by means of artificial induced sleep. The experiments were conducted in the Laboratory of Experimental Sleep of the Institut Psikhatrii Ministerstva Zdravookhraneniya SSSR (The Psychiatric Institute of the USSR Ministry of Health). The experiment was a success. When the dog accidentally died 6 years later, at the age of 21, it was found that some cells in its sexual organs were undergoing a progress of spermatogenesis. It is important that old people preserve their ability to sleep for normal periods. There is 1 photo and 4 sketches.

1. Sleep--Physiological effects

Card 1/1

BRAINES, S. N.

UNESCO/NS/ICIF/ABSTRACT J.6.9

ANALYSIS OF THE WORKING PRINCIPLES OF SOME
SELF ADJUSTING SYSTEMS IN ENGINEERING AND BIOLOGY

S. N. BRAINES, A. V. NAPIKOV,
Psychiatry Research Institute, Moscow, USSR

AND

Yu. A. SCHREIDER,
Electronic Mathematical Machines Research Institute
Moscow, USSR

The report deals with control processes characterized by the volume of utilized information, by the direction of the information streams and the time needed to work out the corresponding control algorithm.

Numerical characteristics of the best attainable quality of control are given, as well as an estimation of the time needed to work out the control algorithm.

The general diagram of development of conditional reflex chains is considered. Algorithms forming the basis of the working out of complex systems of reflexes under various conditions are described on the basis of experimental data. Particularly, algorithms are considered which are connected with the utilization of previously developed reflex chains. A system of subordination in the action of conditional stimuli has been detected in experimental conditions. These mechanisms enable estimation of the information coming in from the environment, reduce the amount of information that has to be treated and eliminates the necessity of testing it all.

PAPER PRESENTED AT:

International Conf. on Information Processing
UNESCO House, Paris
15 - 20 June 1959

BRAYNES, S.N.; NAPALKOV, A.V.; SVECHINSKIY, V.B.

[Scientific records; problems in neurocybernetics] Uchenye
zapiski; problemy neirokibernetiki. Moskva, Akad.med.nauk
SSSR, 1959. 109 p. (MIRA 13:3)
(CYBERNETICS) (BRAIN)

BRAYNES, S.N., prof., red.; NAPAIKOV, A.V., red.; KONEV, S.V., red.;
KORZHOV, V.A., red.; FEDYANIN, G.P., red.; KOBRINSKAYA, O.Ya.,
red.; KUCHINA, Ye.V., red.

[Problems in experimental pathology; collection of articles from
the experimental pathology laboratory] Voprosy eksperimental'noi
patologii; sbornik rabot laboratorii eksperimental'noi patologii.
Pod obshchei red. S.N.Brainsa. Moskva, 1959. 339 p.

(MIRA 14:2)

1. Akademiya meditsinskikh nauk SSSR. Institut psikhiatrii.
(NERVOUS SYSTEM--DISEASES)

27(4)

SOV/25-59-6-10/49

AUTHORS: Braynes, S.M., Professor, and Napalkov, A.V., Candidate of Biological Sciences

TITLE: The Brain and Cybernetics

PERIODICAL: Nauka i zhizn', 1959, Nr 6, pp 17-21 and p 2 of centerfold, (USSR)

ABSTRACT: This is a popular article on some new theoretical propositions contained in a lecture which was prepared by the authors and A.Yu. Shreyder, Candidate of Physico-Mathematical Sciences, on the subject "An Analysis of the Work Principles of Some Self-Adjusting Systems in Engineering and Biology", for presentation at the International Conference on Problems in the Processing of Information, to be held by UNESCO in Paris, June, 1959. The essence of the problem is in the human attempts to construct an automatic self-governing machine which would imitate the functions of the brains of animals or man. The authors admit that the human brain remains unsurpassed, and that however perfect a machine may be, it will only carry out a program of operations placed into it

Card 1/2

SOV/25-59-6-10/49

The Brain and Cybernetics

by man. By studying the functions of the brain, scientists try to solve important problems in developing and perfecting technical cybernetics. The authors tell of experiments conducted by Soviet scientists which were based on the work done previously by I.P. Pavlov, Professor P.K. Anokhin, L.G. Voronin, P.S. Kupalov, and others. Experiments in this field are being conducted in the Institut psikhiatrii Akademii meditsinskikh nauk SSSR (Institute of Psychiatry attached to the Academy of Medical Sciences USSR). A model of a cybernetic machine which should work as a self-governing system has already been constructed in the Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute). Academician A.I. Berg is said to have done much for the development of electronics and cybernetics. There are 5 sets of drawings.

Card 2/2

S/044/62/000/007/066/100
C111/C333

AUTHORS: Braynes, S. N., Napalkov, A. V.

TITLE: Some questions of the theory of self-organizing systems

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 42, 43,
abstract 7V185. ("Vopr. filosofii", 1959, no. 6, 148-154)

TEXT: A self-organizing cybernetic system is a system developing the working program if a final aim is introduced into the system. The question consists of the determination of an algorithm which permits the avoidance of the complete inspection of the variants of the behaviour of the system. The algorithm shall grant: 1) the determination of the rules of the controlled system; 2) the possibility to distinguish regularities from accidents; 3) the choice of the rules necessary for the solution of the put-up problem; 4) the treatment of these rules and the use for the purpose of gaining the final objective; 5) the consideration of the stated rules in the control system. One describes an experiment by which complicated conditional reflexes were caused in a dog. A chain of irritating signals is given, each irritation (beginning with the second one) is a function of the response of the dog to the preceding irritation. Of all possible chains only
Card 1/2

S/044/62/000/007/066/100
C111/C333

Some questions of the theory of ...

one leads to the reception of food and one to the reception of water. Under the influence of the "intercalating irritation" - hunger - the dog searches the first chain by trying out. Adjoining one leads the same signals to the dog which is now full but thirsty. The dog ignores the food chain which is well-known to him and looks for the drinking chain. The drinking chain must contain complete sections of the food chain. Then the dog uses the regularities partly well-known to him and does not accomplish a complete trying out, a fact which influences the time of training. The possible algorithm of the searching for the necessary chain in the brain of the dog is given. It grants the comparison of the information stored in the brain with the information from outside and the selection of the useful information for the purpose of avoiding the complete trying out of all variants of the behaviour.

[Abstracter's note: Complete translation.]

Card 2/2

BRAYNES, S

N

Scientific Notes: Problems of Cybernetics (By) S.W. Braynes, A.V. Napalkov,
and V.B. Svehinskiy. New York, U.S. Joint Publications Research Service, 1960.

208 p. Diags., Tables. (JPRS: 5880) (OTS: 60-41, 639)

Translated from the original Russian: Uchenyye Zapiski: Problemy
Neyrokibernetiki, Moscow, 1959.

Bibliography: p. 196-208.

BRAYNES, S.N., .prof.; NAPAL'KOV, A.V., kand.biol.nauk; SVECHINSKIY, V.B.
[Sviechyns'kiy, V.B.], inzh. (Moskva)

Neurocybernetics. Nauka i zhyttia 10 no.5:16-20 My '60.
(MIRA 13:7)

(CYBERNETICS) (NERVOUS SYSTEM)

BRAYNES, S.N., prof.; NAPALCOV, A.V., kand.biol.nauk; SVECHINSKIY, V.B., inzh.

Neuro-cybernetics. Nauka i zhizn' 27 no.5:32-36 My '60.
(MIRA 13:6)

(CYBERNETICS)

(NERVOUS SYSTEM)

BRAYNES, Samuil N., NAPALKOV, A. V., AND SVECHINSKIY, V. B.

"Principles of Data Processing on Learned Systems."

Report submitted for the Meeting of Technical Committee 6 (Learning Automats)
Communications Technical Society (German) Karlsruhe, West Germany, 13-14 April 1961

Inst. of Psychiatry, Moscow

S/044/62/000/006/120/127
B160/B102

AUTHOR: Braynes, S. N.

TITLE: Neurocybernetics

PERIODICAL: Referativnyy zhurnal. Matematika, no. 6, 1962, 77, abstract
6V421 (Sb. "Kibernetiku - na sluzhbu kommunizmu. v. 1".
M.-L., Gosenergoizdat, 1961, 140-153)

TEXT: The basis of cybernetics, in the author's opinion, is that the laws of control, communication, and information processing are common to machines and living organisms. The author throws light on the present-day situation in the areas of medicine and biology where it has proved possible to make direct use of the mathematics of cybernetics. The first example of this use is neurocybernetics, i. e. the study of the brain from the point of view of cybernetic principles on the basis of the apparatus of mathematical logic, probability theory, and games theory. The author discusses the first attempts to construct models of nerve cell networks and some present-day work in this direction. Work on algorithmization of behavior, production of a conditioned reflex,

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Neurocybernetics

S/044/62/000/006/120/127
B160/B102

teaching, and shape recognition is discussed. The author considers recording and deciphering of the brain's biocurrents to be one of the possibilities in cybernetic analysis of the brain's activity. The author considers the second task of biocybernetics to be the study of the processes of controlling physiological processes in an organism since cybernetic methods allow one to come close to a quantitative description of these processes ("biocontrol"). The author gives some examples of research into biocontrol which describe the operation of individual control mechanisms (body temperature, level of sugar in blood etc.). The author sets forth his own original hypothesis of the structure of the overall physiological process control system in an organism; according to this hypothesis, the whole control system consists of three levels, each higher level monitoring and controlling a lower one. Apart from the theoretical questions relating to cybernetic analysis of the operation of a living organism, the author discusses the practical help that cybernetics may give medicine. One of the main practical problems of medicine is that of making a diagnosis; cybernetics, in the author's opinion, may give considerable help in the solution of this problem. In conclusion, the author lists other possibilities for the use of cybernetics in medicine, notably cybernetic prosthesization of worn-out organs, the creation of a "heart-lungs" apparatus, and so on.

2/2 [Abstracter's note: Complete translation.]

PHASE I BOOK EXPLOITATION

SCV/6047

Braynes, Samuil Natanovich, Anatoliy Viktorovich Napalkov, and Vladislav
Borisovich Svecinskiy

Neyrokibernetika (Neurocybernetics) Moscow, Medgiz, 1962. 170 p.
10,000 copies printed.

Ed.: K. M. Kullanda; Tech. Ed.: N. A. Bul'dyayev

PURPOSE: This book is intended for research scientists concerned with the application of cybernetics to the study of the functions of the nervous system and the brain.

COVERAGE: The book deals with the application of the methods of cybernetics to the scientific analysis of complex processes of control, processing, and transmission of information. These elements represent the basic forms of activity of the nervous system and the brain and control the function of internal organs. The book treats the representation of nerve networks, self-programming systems, complex systems of conditional reflexes, mechanisms of complex behavior based

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Neurocybernetics

SOV/6047

on processing stored information, classification of ideas and development of concepts by robots, and the application of neurocybernetics in physiology and medicine. The possibility of using cybernetics in surgery, in particular, is pointed out. Chs. I, II, and VI are general in character and should be of interest to physicists, biochemists, pathologists, and physicians in research. Chs. II, III, IV, and V should be of interest to specialists in engineering cybernetics and theoretical cybernetics and to physiologists using the methods of cybernetics. Chs. III and IV will also be of interest to research workers concerned with neurocybernetic experiments on the brain. The authors thank A. I. Berg, Academician, Director of the Institut khirurgii (Institute of Surgery); A. A. Vishnevskiy, Professor, Member, Academy of Medical Sciences USSR; E. Ya. Kol'man, Academician; V. S. Novikov, Professor; A. L. Andreyev, Professor; and A. A. Bednyakov, Engineer. There are 140 references: 99 Soviet (including 24 translations), 32 English, 7 German, 1 Czech, and 1 Polish.

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F. A. E., Moscow Institute of Radio Engineering and Electronics - "On designs for automatic recognition of patterns in noise" (Section III)

BRAYNES, S. N., and SVECHINSKIY, V. B., Biocybernetical Institute, University of Moscow - "Matrix structure in stimulating of learning" (Section VII)

DOBROUDIN, R. L., and TSYRAKOV, B. S., Moscow Institute of Radio Engineering and Electronics - "Information transmission with additional noise" (Section XI)

FLEISHMAN, B. S., Moscow Institute of Radio Engineering and Electronics - "Basic theorems of the constructive information theory" (Section VIII)

NAPALKOV, A. V., Chair of Higher Nervous Activity, Moscow State University - "Mechanisms of the selection of useful and trustful information" (Section IX)

REPORT to be submitted for the International Symposium on Information Theory,
Brussels, Belgium, 3-7 Sep 1962

VISHNEVSKIY, A.A.; BRAYNES, S.N.; SHRAYBER, M.I.; BRAILOVSKIY, V.L.;
KUCHINA, Ye.V.; PANOVA, Yu.M.

Cybernetic method of determining the severity of the condition
and prognosis in burns. Eksper. khir. i anest. 8 no.4:3-6
Jl-Ag '63. (MIRA 17:5)

1. Institut khirurgii imeni A.V. Vishnevskogo (direktor-deystvitel'-
nyy chlen AMN SSSR prof. A.A. Vishnevskiy) AMN SSSR.

BRAYNES, S.N.; SVECHINSKIY, V.B.

Elements of a general theory of the control in the body.
Eksp. khir. i anest. 8 no.5:3-8 S-D '63. (MIRA 17:6)

1. Institut khirurgii imeni A.V. Vishnevskogo (direktor -
deystvitel'nyy chlen AMN SSSR prof. A.A. Vishnevskiy)
AMN SSSR.

BRAYNES, S. N., Prof., SVECHINSKIY, V. B.

"Elements of a general theory of control in organisms."

Report submitted at the 3rd International Congress of Cybernetic Medicine,
(International Society of Cybernetic Medicine), Naples, Italy, 21-24 Mar 64.

BRAYNES, S. N.; VISHNEVSKIY, A.A.; SHRAYBER, M. I.; PANOVA, Yu. M.;
BRAYLOVSKIY, B. L.; CHUCHINA, Ye. V.

"A cybernetic assessment of the general condition and prognosis of
burns."

Report to be submitted for the 3rd International Congress of Cybernetic
Medicine (International Society of Cybernetic Medicine) Naples, Italy,
21-24 Mar 64.

BRAYNES, S.N.; SVECHINSKIY, V.B.

Models of some physiological adaptation processes on electronic computers. Eksp. khir. i anest. 9 no.5:9-17 S-0 '64.

(MIRA 18:11)

1. Institut khirurgii imeni A.V.Vishnevskogo (direktor - deystvitel'nyy chlen AMN SSSR prof. A.A.Vishnevskiy) AMN SSSR, Moskva.

L 24894-65 EWG(j)/EWT(d)/EWG(r)/EWT(l)/EEG(a)/PS(v)-3/EWG(v)/EEG-l/EWG(a)/
EED-2/EWG(c)/EWP(l)/EEG(g) Pb-l/Pe-5/Pg-l/Pk-l/Pl-l/Pq-l IJP(c) GG/DD/BB/

ACCESSION NR: AR4046916

S/0299/64/000/017/A007/A007

SOURCE: Ref. zh. Biologiya. Svodnyy tom, Abs. 17A32

AUTHOR: Braynes, S. N.; Suslov, A. I.

TITLE: Information processes from a biccybernetic aspect

CITED SOURCE: Eksperim. khirurgiya i anesteziol., no. 2, 1964, 13-18

TOPIC TAGS: cybernetics, biological system, information recording, molecular recording technique

TRANSLATION: A possible elementary information process mechanism is hypothesized according to which information transmission in biological systems is based on the interaction of macromolecular structures with an electromagnetic field. Elementary acts of information transmission and processing must be based on energy exchange between specific molecular complexes through the means of an electromagnetic field, and the molecules whose electrons are excited in the same manner act as coupled oscillators; in such a system, excitation can be sustained for a sufficiently long period. The structure which

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ACCESSION NR: AR4046916

interacts with the field can be considered as a grid whose elements also include the oscillators. Grids can overlap as long as different type oscillators are included in the same biological structures, that is, generators of different frequencies with separation of grids taking place according to the frequencies on which their basic elements operate. The grid, whose basic elements are the coupled oscillators, has the property of quasi-periodicity as long as each oscillator belongs to a certain macromolecular structure which is repeated in all the cells. It is specifically indicated that signal transmission from the receptors to the centers along the nerve fiber is somewhat similar to field propagation in a dielectric waveguide quantum amplifier; and, in this case the electric processes in the nerve fiber should be regarded as excitation of the fiber molecular structures, as a result of which signal transmission of the electromagnetic field takes place in a negative absorption medium. The presence of a quantum amplifier in the mediums helps reduce information losses during its transmission, and the number of possible feedbacks, forming in the course of biological information processes because of linear and nonlinear interaction of electromagnetic field vibrations, can be significantly increased. The disadvantages of

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ACCESSION NR: AR4046916

models based on relay principles are emphasized. It is stated that anesthesia can be regarded as a disturbance of certain information processes in the cell systems. Bibliography, 16 titles. V. Ghtetsov

SUB CODE: LS, DP

ENCL: 00

Card 3/3

VISHNEVSKIY, A.A., general-polkovnik meditsinskoy sluzhby, prof.; SHRAYBER,
M.I., general-mayor meditsinskoy sluzhby, prof.; BRAYNES, S.W., prof.

Cybernetic methods in the prognosis of burn sickness. Voen.-med. zhur.
no.6:9-11 '64. (MIRA 18:5)

BRAYNES, YA. M.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 430 - I

BOOK

Call No.: TP157.B66

Author: BRAYNES, YA. M.

Full Title: PROCESSES AND APPARATUS IN CHEMICAL INDUSTRIES

Transliterated Title: Protsessy i apparaty khimicheskikh proizvodstv

Publishing Data

Originating Agency: None

Publishing House: State Scientific and Technical Publishing House
of Chemical Literature

Date: 1947

No. pp.: 596

No. of copies: 15,000

Editorial Staff: None

Text Data

Coverage: The book discusses the basic principles underlying chemical plant operation. A description of standard processes and apparatus is given. The book consists of two parts: Part I is devoted to mechanical processes, and Part II to thermal processes. At the end of each chapter are given exercises for application of calculation methods and of formulae, of importance to students specializing in construction of chemical equipment. The highlights of this textbook are the clarity and completeness of the procedures and the simplicity of presentation of the theoretical principles. Numerous references, illustrations and tables complete this book.

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Protsessy i apparaty khimicheskikh proizvodstv

AID 430 - I

It is a well-balanced treatment of the theory and practice of plant operation and an adequate textbook for student-technologists. The listing of contents below indicates the scope and purpose of the book.

TABLE OF CONTENTS	PAGE
PART I MECHANICAL PROCESSES AND APPARATUS	
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Ch. II Equipment for Transfer of Liquids, Gases and Solids	53
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Ch. IX Drying	395
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Protsessy 1 apparaty khimicheskikh proizvodstv

AID 430 - I

Purpose: This is a textbook designed to be used in chemical-technological institutions. It is also recommended for use by engineers employed in chemical industries.

Facilities: Some plants are mentioned

No. of Russian and Slavic References: 31 (after 1939)

Available: Library of Congress

3/3

BRAYNES, YA.M.

Calculation of the surface of steam condensers taking into consideration non-condensing gases

Trudy Mosk. inst. khim. mash., no.2,(10), 1950

S/064/60/00./104/020.021/XX
BC13/B06C

AUTHORS: Planovskiy, A. N., Braynes, Ya. M.

TITLE: Examples and Tasks for the Course on Processes and Apparatus
of Chemical Technology by K. F. Pavlov, P. G. Romankov,
A. A. Noskov

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 4, pp. 84-85

TEXT: This is a review of the book by K. F. Pavlov, P. G. Romankov,
A. A. Noskov: "Primery i zadachi po kursu protsessov i apparatov
khimicheskoy tekhnologii", fourth completed and revised edition,
published by "Goskhimizdat" in 1959, 574 pages. This collective work
whose first edition appeared in 1947, contains 10 chapters in the
succession prescribed for educational courses at institutes of chemical
technology. The 4th edition has been completed by chapters on
"Adsorption" and "Extraction". An appendix contains 61 tables and 34
diagrams and nomograms. The fact is stressed that the book fulfills its
purpose. The systematic structure of every chapter is correct. The book

Card 1/3

Examples and Tasks for the Course on
Processes and Apparatus of Chemical
Technology by K. F. Pavlov, P. G. Romankov,
A. A. Nerskov

S/064/60/000/004/020/021/XX
B013/B060

encompasses all the sections of the course and contains 230 examples and 346 examination tasks. The 1st chapter gives examples for the calculation of specific gravity, density, and viscosity of pure liquids and gases, of mixtures, suspensions, etc. The calculations of hydraulic resistances are conformed to chemical apparatus. The 2nd chapter contains examples for calculations in connection with the type selection and the dimensions of pumps, ventilators, compressors, as well as the power consumed by them. The 3rd chapter offers examples for the calculation of sedimentation processes according to gravitation and centrifugal force, of filtration, centrifuging, and mixing. Heat transfer in chemical apparatus is very thoroughly dealt with in the 4th chapter. The 5th chapter deals with evaporation and crystallization, and the 6th chapter deals with the drying process. The 7th chapter gives examples for the calculation of distillation, rectification, and adsorption processes as well as examples for the construction and application of enthalpy diagrams. The 8th and 9th chapters, which were missing in the earlier editions, deal

Card 2/3

Examples and Tasks for the Course on
Processes and Apparatus of Chemical
Technology by K. F. Pavlov, P. G. Romankov,
A. A. Noskov

S/064/60/000/004/020/021/XX
B013/B060

with adsorption and extraction. The 10th chapter gives examples for the calculation of moderate and low-temperature cooling. It is finally noted that it would be desirable to issue a collection volume with calculation diagrams and nomograms on a suitable scale to be added to the book under discussion. Lyashchenko, M. A. Mikheyev, M. A. Kichigin, G. N. Kostenko, A. G. Kasatkin are mentioned. There is 1 Soviet reference.

Card 3/3

BRAYNES, Yakov Matveyevich; BABUSHKINA, S.I., ved. red.; FEDOTOVA,
I.G., tekhn. red.

[Similitude and modeling in chemical and petrochemical processes] Podobie i modelirovanie v khimicheskoi i neftekhimicheskoi tekhnologii. Moskva, Gos.nauchno-tekhn.izd-vo نفت. i gorno-toplivnoi lit-ry, 1961. 219 p. (MIRA 15:2)
(Chemical models)

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AM5012897

BOOK EXPLOITATION

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11
841

Lovyagin, Mikhail Aleksandrovich; Korsakov, Vadim Mikha'ylovich; Kaganer, YAKov
Borinovich; Garin, Eduard Nikolayevich; Vydrovich, Gersh Itokovich;
Bederman, Aleksandr L'vovich; Braynin, Abram Isaakovich; Gubkin, Ivan Vasil'yevich

Floating metal docks (Metallicheskiye plavuchiye doki) Leningrad, Izd-vo "Sudo-
stroyeniye", 64. 0335 p. illus., biblic. Errata slip inserted. 1,7000 copies
printed.

TOPIC TAGS: service craft, floating dry dock, marine equipment

PURPOSE AND COVERAGE: The book is a generalization on experience in the designing,
building and operation of metal docks. Theoretical research results on vessel
theory and strength of docks conducted during last 15 years are included.
The book contains data determining parts, weight for designed docks, formulas
giving the advantageous height important for strength, for floating during longitu-
inal launching etc. Special chapter is dedicated to a method compiling assignments —
used for dock designing. The book is intended for engineers and technicians
working on designing, building and operation of floating docks. It is useful
also for students of shipbuilding higher technical schools, universities and technical
schools.

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AM5012697

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SUBMITTED: 27Sep64

SUB CODE: MS

NO REF SOV: 081

OTHER: 075

Card 3/3

BRAYNIN, E.I.

Fifty hertz vibrosopes. Ism. tekhn. no. 4:69 J1-Ag '57. (MLRA 10:2)
(Vibration--Measurement)

BRAYNIN, E. I.

Investigating the performance stability of a PS-39 light source
generator for spectrum analysis. Zav. lab. 23 no.5:627-630 '57.
(MLRA 10:8)

1. Stalinskiy metallurgicheskiy zavod.
(Spectrum analysis) (Photoelectricity)

7(6), 18(3)

AUTHOR: Braynin, E. I.

SOV/32-24-12-23/45

TITLE: A Critical Comparison of Various Methods for the Spectrographic Determination of Nickel in Steel (Sravnitel'naya otsenka razlichnykh metodik spektrograficheskogo opredeleniya nikelya v stali)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 12, pp 1479 - 1483 (USSR)

ABSTRACT: In order to find the best method for determining nickel in steel six methods which can be used for nickel concentrations of 0.2-4.8% were compared. Standards of the 5., 21., and 22. series of the LSO (Laboratoriya standartnykh obraztsov)(Laboratory for Standard Samples) as well as forged and annealed factory samples were used. AISP -22 spectrograph with 3 and 9-degree clearing agents was used. The general analysis conditions are given in a table (Table 1). Three of the methods compared (I,IV,VI) utilize a spark excitation of the spectrum and three methods (II,III,V) use an electric arc. One of the

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A Critical Comparison of Various Methods for the
Spectrographic Determination of Nickel in Steel

SOV/32-24-12-23/45

methods (I) is recommended by LSO while another method (VI) requires the IG-2 generator in order to produce intensive spectra. One of the electric arc methods (II) is recommended by TsNIICHM (Ref 1). The experimental results obtained are graphically (Figs 1,2) represented and given in a table (Table 2). The most accurate and reproducible analytical results are obtained with method (I). At nickel concentrations of 0.2 - 1.2% a tripling of the sample fulfills the requirements of GOST-2604-44. Of the methods employing an electric arc method (II) can be used only to 0.5% Ni. The electric arc methods using carbon electrodes and the PS-39 generator give poor results for nickel concentrations above 0.2%. According to the experimental results method (I) is recommended for investigations on steel. This method can be used for the rapid analysis of a variant which involves a photometric interpolation. There are 2 figures, 2 tables and 1 Soviet reference.

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A Critical Comparison of Various Methods for the
Spectrographic Determination of Nickel in Steel

SOV/32-24-12-23/45

ASSOCIATION: Stalinskiy metallurgicheskiy zavod im. Stalina (Stalino
Metallurgical Plant imeni Stalin)

Card 3/3

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18.7500

~~24(6), 18(7)~~

SOV/181-1-9-30/31

AUTHORS:

Davidenkov, N. N., Braynin, E. I.

TITLE:

On the Problem of the Nature of the Slip Plane of Metals

PERIODICAL:

Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1479 - 1483 (USSR)

ABSTRACT:

Russian metallurgists developed a new hypothesis on the nature of the slip plane of metals in the past years, the so-called theory of sliding along the grain boundaries¹ (Refs 1-3). According to this theory, the mechanism of metal deformation in the region of the slip plane leads to a dislocation of the grains along the boundaries. This theory is based on experiments, as is briefly shown. The authors made experiments in order to verify this hypothesis and selected a material having the largest possible slip plane. Two specimens were prepared, stripsets of cold-rolled steel sheet of type 08KP. In the case of one specimen, the axis was in the rolling direction, and in the other, it was perpendicular thereto. The steel had the following composition: C 0.09, Mn 0.45, S 0.020, P 0.024, Cr 0.03, Ni 0.08%, and Si traces. The degree of reduction in cold rolling was 75% (primary sheet thickness, terminal thickness 0.5 mm). In order to maintain

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On the Problem of the Nature of the Slip Plane of Metals SOV/181-1-9-30/31

a sufficiently high deformation on the slip plane, tempering was applied during one hour at 600°C. In preliminary experiments the elongation on the fluidity area attained 11%. The first specimen was polished on the broadside and was etched with ammonium persulfate, and the skin was left on the other side; the second specimen was etched with 3% alcoholic nitric acid solution. The calculation of the grain size is described. The experimental results are compiled in two tables. They are indicative of the fact that all deformations occurring on the slip plane are caused by dislocations inside the grains. Thus it is found, as is shown by a direct experiment, that the hypothesis of the sliding along the grain boundaries is inapposite. Davidenkov and Kottrell are mentioned in the text. There are 2 tables and 8 references, 6 of which are Soviet.

ASSOCIATION: Politekhniicheskiy institut im. M. I. Kalinina Leningrad
(Polytechnic Institute imeni M. I. Kalinin, Leningrad)

SUBMITTED: April 16, 1959

Card 2/2

DAVIDENKOV, N.N., akademik, prof.; BRAYNIN, E.I., inzh.

Effect of heat treatment on the direction of slip lines
in cold-rolled steel. Izv.vys.ucheb.zav.; Chern.Met. 2
no.10:79-87 0 '59. (MIRA 13:3)

1. Leningradskiy politekhnicheskoy institut. AN USSR.
Rekomendovano kafedroy fizicheskogo metallovedeniya
Leningradskogo politekhnicheskogo instituta.
(Dislocation in crystals)
(Rolling (Metalwork))

BRAYNIN, E.I.

Oscillographic study of the deformation of steel test pieces
in the flow plateau. Zav.lab. no.11:1366-1368 '59, (MIRA 13:4)

1.Leningradskiy politekhnicheskii institut im.M.I.Kalinina.
(Steel-Testing) (Deformations (Mechanics))

S/148/60/000/006/010/010

AUTHOR: Braynin, E. I.

TITLE: The Filming of Deformations^{VP} in the Flow Zone of Steel Specimens

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1960, No. 6, pp. 188-192

TEXT: Contradictory results have been obtained on deformation kinetics in the flow zone of steel. Some data show that the border of the deformed zone moves smoothly along the specimen. On the other hand, films taken by V. S. Ivanova (Ref. 3) showed that in Armco-iron specimens this border moved in macroscopic jumps, which, however, did not appear on the extension diagram. It is assumed that jumplike deformation is not characteristic of steel deformed at room temperatures and conventional speeds. Films were taken during the deformation of cylindrical "20" steel and flat "08кп" (08kp) steel specimens. The round specimens were subjected to recrystallization (at 700°C for 1 hour and air-cooling) after extension by 3%. Extension during filming was performed on a UMP-12 (IMR-12) machine. The flat specimens were subjected to recrystallization at 600°C for 1 hour and air cooling. Extension was carried out on the Hungarian "Sz-5-1" type machine. As a result of the tests performed the

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3/148/60/000/006/010/010

The Filming of Deformations in the Flow Zone of Steel Specimens

following conclusions are drawn: Deformation of steel in the flow zone at room temperatures develops smoothly, corresponding to the motion of the machine grip. Compact cylindrical specimens are deformed by the formation and extension of consecutive layers. During the deformation of the flat specimens, tested in a state following recrystallization annealing, such layers are not formed and the deformed zone moves in a single front. There are 4 sets of film-photos and 5 references: 2 English and 3 Soviet.

ASSOCIATION: Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute) ✓B

SUBMITTED: December 16, 1959

Card 2/2

S/137/61/000/007/069/072
A060/A101

AUTHOR: Braynin, E. I.

TITLE: Influence of structure and test temperature on the yield point of soft steel

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1961, 7-8, abstract 7144 ("Nauchno-tekhn. inform. byul. Leningr. politekhn. in-t", 1960, no. 7, 73-80)

TEXT: Soft steel 08K η (08kp) produced at the "Zaporozhstal'" plant with constitution (in %): C 0.07, Si 0.03, Mn 0.41, S 0.026, P 0.012, Cr 0.02, Ni 0.06, Cu 0.11, N 0.002 - 0.006 was investigated. It was established that at low test temperatures the σ_s of soft steel is a function of grain size and of temperature, testifying to the major role of thermal fluctuations favoring the rise of free dislocations and their displacement in grain under the action of stresses arising from accumulated dislocations in a neighboring grain. At higher test temperatures, beginning with a certain temperature which is the lower the larger the grain, σ_s is independent of grain size and temperature, and is determined only by the intragranular resistance to dislocation displacement.
[Abstracter's note: Complete translation]
T. Rummyantseva

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82997

S/181/60/002/008/016/045
B006/B070

24,4100

AUTHORS:

Davidenkov, N. N., Braynin, E. I.

TITLE:

The Character of Shear Formation at a Fluidity Area in
Metals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1816-1817

TEXT: If thin samples are deformed at a fluidity area, forms are built as represented schematically in Fig. 1. The form of shear deformation is characterized by the axial angles of slope: α and β . These quantities depend on the material and are independent of the eccentricity of the forces applied. The authors investigated thin samples of steel of the grades cr. 20 (st.20), and 08 KΠ(08 KP) (100-160 mm long, 10 - 15 mm wide, 0.5-1.8 mm thick). α and β were 2° and changed with the heat treatment and composition of the steel, parallel with the magnitude of the critical deformation ϵ_s (cf. Fig. 2). Such a slope of the axes takes place not only in plane samples but also in the circularly cylindrical ones. In order to describe the gliding of the individual planes of the

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The Character of Shear Formation at a
Fluidity Area in Metals

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S/181/60/002/008/016/045
B006/B070

crystal on one another due to tensile stress, it is assumed that a deformation at a fluidity area proceeds in such a manner that under the action of maximum tangential stresses which form an angle of 45° with the longitudinal axis of the sample, all grains undergo a mass parallel shift. Fig. 3 shows the initial and the deformed state of the sample for this case. When the sample is stretched, the crystal planes glide on one another in such a way that the interplanar spacings remain unchanged. A formula is given for the relative linear expansion. Numerical values show that the assumptions made about the mechanism of shear are correct. There are 3 figures and 2 non-Soviet references.

ASSOCIATION: Politekhneskiy institut im. I. M. Kalinina Leningrad
(Polytechnic Institute imeni I. M. Kalinin, Leningrad)

SUBMITTED: December 26, 1959

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S/057/60/030/008/019/019
B019/B060

AUTHOR:

Braynin, E. I.

TITLE:

Letter to the Editor. The Problem of Anisotropy of the
Strength of Building Materials (in Connection With the
Article by Ye. K. Ashkenazi)

PERIODICAL:

Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 8,
pp. 1006-1007

TEXT: A comparison is made between experimental values concerning the strength of building materials and such calculated by a given formula (Fig. 1). This formula was derived for orthotropic sheet material under loads in the direction of the sheet plane. Experiments were made on samples of cold-rolled 08KП (08KP) steel, which had the dimensions 130·18·0.5 mm and were cut out in various directions to the rolling direction. Fig. 1 is a graph illustrating the results for four different experimental conditions as related to the treatment after rolling. It was found that the formulas suggested by Ye. K. Ashkenazi are not correct

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DAVIDENKOV, N.N., BRAYNIN, E.I.

Certain geometrical characteristics of the deformation of steel
in the flow plateau. Inzh.-fiz.zhur. no.2:86-89 F '60.
(MIRA 13:7)

1. Politekhnikheskiy institut im. M.I. Kalinina, Leningrad.
(Steel-Testing)
(Deformations (Mechanics))

BRAYNIN, E.I.

Measuring dihedral angles on the microinterferometer
developed by Linnik. Izv.tekh. no.4:11 Ap '60.
(MIRA 13:8)

(Interferometer)

34130

S/124/62/000/001/046/046
D237/D304

12.8200
AUTHOR:

Braynin, E. I.

TITLE:

Influence of the structure and temperature
during test on the yield point of mild steel

PERIODICAL:

Referativnyy zhurnal, Mekhanika, no. 1, 1962,
55, abstract 1V488 (Nauchno-tekhn. inform. byul.
Leningr. politekhn. in-t, 1960, no. 7, 73-80)

TEXT: The influence of the grain size, tempering, and tempera-
ture during test on the lower yield point σ_s and on the length
of the surface of yield ϵ_s was investigated for the 08KП (08KP)
on stretching with the velocities of 1.2 and 12 mm/min. With the
tempering temperature of 200°C as a starting point, σ_s decreases ✓
to a minimum, depending on the grain size (350°C--coarse grain,
400°C--fine grain), then rises and reaches the maximum at about

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D237/D304

Influence of the...

700°C. On an increase in the tempering temperature, ϵ_s diminishes, but does not disappear up to a tempering temperature of 900°C. Slope of the surface of yield also changes. The influence of the speed of testing was defined by $\Delta \sigma_s / \sigma_s$, where $\Delta \sigma_s$ -- difference in σ_s on the fast and slow stretching, σ_s -- tensile yield point on slow stretching. The curves of $\Delta \sigma_s / \sigma_s$ versus tempering temperature possess a maximum at 200°C (fine grain) and 450°C (coarse grain). $\Delta \sigma_s / \sigma_s = 0$ for the tempering temperature of 650°C - 670°C, which coincides with the temperature of a complete solution of nitro-compounds of iron and of tertiary cementite in ferrite. On the rise of the testing temperature, σ_s falls sharply in the beginning, then remains constant to 500°C, while $\epsilon_s = 0$ at 200° - 250°C. It is inferred that at low testing temperatures, σ_s depends on the grain size

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DAVIDENKOV, N.N.; BRAYNIN, E.I.

Character of shear formation in the flow area of metals. Fiz. tver.
tela 2 no.8:1816-1817 Ag '60. (MIRA 13:8)

1. Politeknicheskii institut im. M.I.Kalinina, Leningrad.
(Deformations (Mechanics))

BRAYNIN, E. I., Cand Tech Sci -- "Study of ~~the~~ plastic de-
formation of low-carbon steel in the ~~liquid state~~ ^{area of the yield point}." Len,
1961. (Acad Sci USSR. Lenin Phys-Tech Inst im A. F. Ioffe)
(KL, 8-61, 241)

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188200

1413, 1418

S/126/61/011/003/011/017
E193/E483

AUTHORS: Davidenkov, N.N., Braynin, E.I., and Vasil'yev, D.M.
TITLE: On the Problem of the Mechanism of the Formation of the
Lüder's Lines and the Geometry of Plastic Deformation
of Steel Specimens in the Yield Ledge Region
PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.3,
pp.451-460

TEXT: The stress-strain diagram of some metals, of which steel is one example, is characterized by the presence of the yield ledge, i.e. a region within which strain continues to increase at a constant stress. This effect is associated with non-uniform deformation of the specimen in the initial stages of the plastic deformation process. On reaching the yield point, only a small portion of the specimen deforms plastically, this process continuing until the plastically deformed region attains elongation corresponding to the end of the yield ledge. When this stage has been reached, a region of plastically deformed material exists side by side with a region of undeformed metal, and the boundary between these two regions constitutes also a

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boundary between two parts of the specimen which, now, have different diameters. These sudden changes of the diameter of the specimen not only cause stress concentration which promotes spreading of the plastic deformation to the yet undeformed regions but also give rise to surface marks, known under the name of Lüder's lines, which do not disappear even when the mean diameters of the adjacent parts of the specimen become identical as a result of further deformation. A study of the process of deformation of the surface of a steel test piece, carried out by the present authors with the aid of high speed cine-photography, showed that the formation of Lüder's lines is associated with the arrests of the front of the deformation region and with the appearance of new deformation nuclei, the arrests being probably caused by localized variation of the mechanical properties of the metal along the specimen. It is pointed out here that the formation of Lüder's lines is independent of the nature of localized plastic deformation; irrespective of the physical causes of the latter effect, the very presence of boundaries between the deformed and undeformed regions and the periodic arrests of the deformation front are sufficient to cause the appearance of the Lüder's lines. Consequently, in
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studies of the mechanism of the initial stages of plastic deformation, the analysis of the geometry of the process and of the physical causes of the localization of deformation is of fundamental importance, the nature of Lüder's lines (which are merely an external manifestation of localized deformation) being a relatively simple problem. In this connection, the present authors discuss a hypothesis due to L.B.Erlikh (Ref.1) who has postulated that the surface layer of a plastically deformed specimen constitutes a "weak" region which deforms plastically under stresses, constituting $1/2$ to $2/3$ of the yield point of the material tested; as a result, at the moment in which localized plastic deformation begins and the load, consequently, decreases, compressive stresses are set up in the surface layer of the tensile test piece, the surface layer loses its stability and "crumples", the resultant "creases" representing the Lüder's lines. However, apart from the fact that Lüder's lines are a volume and not a surface phenomenon (Ref.2) and that Erlikh's hypothesis does not explain the formation of Luder's lines on compressed specimens, the theory of redistribution of macro-stresses (during macroscopically uniform deformation) under the influence of the hypothetical

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"weakened" surface layer has not been supported by experimental evidence. Since, in addition, the very existence of the "weak" surface layer has not been experimentally proved, Erlikh's hypothesis cannot be regarded as having been sufficiently substantiated. The basis of the theory, postulated by the present authors, is provided by consideration of a tensile test piece which is being deformed by the mechanism of slip. If slip takes place in one direction only, and if the process of plastic deformation (taking place within the yield ledge region) is localized, deflection of the specimen axis must occur at the boundary between the plastically and elastically deformed regions. This is illustrated in Fig.1 which shows a specimen deforming by slip on planes at 45° to the specimen axis, the diagram showing the initial (I) and deformed (II) state of the specimen in a plane passing through the specimen axis and parallel to the direction of slip. In this case, elongation of the specimen takes place by parallel slip of the adjacent crystallographic planes under the action of the maximum tangential stress. Since the interplanar distance during slip must remain constant, it follows from Fig.1

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that the relative deformation ϵ is given by

$$\epsilon = \frac{l_2 - l_1}{l_1} = \frac{\cos 45^\circ - \cos (45^\circ + \gamma)}{\cos (45^\circ + \gamma)} \quad (1)$$

where l_1 and l_2 denote the length of the deformed part of the specimen before and after deformation, and γ is the angle through which the specimen axis has been bent as a result of deformation. For small γ (measured in radians) Eq.(1) becomes

$$\epsilon = \frac{\gamma}{1 - \gamma} \approx \gamma \quad (2)$$

Similar relationship

$$\epsilon = \frac{d_1 - d_2}{d_1} \approx \gamma \quad (3)$$

is obtained from the consideration of the change in the diameter of the specimen, measured in the direction of slip. It can also be seen from Fig.1 that in the case of a cylindrical specimen, deformed
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locally by slip taking place in one direction only, the boundary between the elastically and plastically deformed regions (i.e. a Lüder's line) represents an ellipse, inclined to the specimen axis at an angle of approximately 45° . This has been confirmed by the examination of a comparatively rare example of a cylindrical tensile test piece, a part of which (approx. 10 mm long) deformed by slip in one direction only. An expanded graph of a Lüder's line, formed on this specimen, is shown in Fig.2 (curve 1) together with a graph of a line (ellipse) formed on the surface of this specimen by a plane, intersecting it at an angle of $47^\circ 30'$. Measurements carried out on this specimen showed that $d_1 = 9.55$ mm, $d_2 = 9.40$ mm and $\gamma = 1^\circ 03' = 0.018$; hence $\epsilon = 0.016 \approx \gamma$ which confirms the validity of Eq.(1) and (2) for the case under consideration. The geometry of deformation of cylindrical specimens in which slip occurs in more than one direction is analysed in a similar manner, and it is shown that in this case the slip planes do not intersect the entire cross-section of the specimen. A nucleus of a deformed region "spreads" into the surrounding material in a direction which does not correspond to

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the direction of any particular slip, but which is determined by the "interference" of all slips taking place at a given moment. As a result of this slip "interference", the material flows in consecutive layers on a complex, saddle-like surface whose intersection with the specimen surface produces a Lüder's line. Whereas in the case of "compact" test pieces (i.e. specimens of round or square cross-section) the Lüder's lines appear as distinct, equidistant bands, the plastically deformed region of a thin, flat test piece is characterized by a uniformly roughened surface. Although the cause of this difference is still somewhat obscure, the present authors show that the formation of Lüder's lines within a plastically deformed region (as distinct from those which are an external evidence of the boundaries between the elastically and plastically deformed regions) are most likely associated with the arrests of the deformation front. Finally, experiments are described whose object was to ascertain whether slip takes place along the grain boundaries or within the grains. To this end, the number of grains per unit length was measured in two directions (parallel and normal to the specimen axis) before and after deformation that had taken place within the yield ledge region.

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Comparison of the deformation of grains in different parts of the specimen with the macroscopic deformation of these parts proved conclusively that in the initial stages of plastic deformation (i.e. within the yield ledge region) steel deforms plastically by slip within the grains. There are 8 figures and 31 references: 20 Soviet and 11 non-Soviet.

ASSOCIATION: Leningradskiy politekhnicheskiy institut
(Leningrad Polytechnical Institute)

SUBMITTED: July 13, 1960

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On the Problem of ...

S/126/61/011/003/011/017
E193/E483

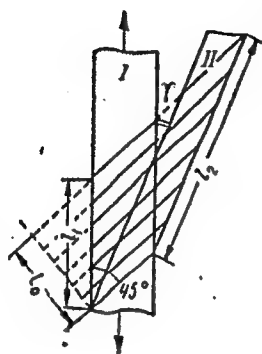


Fig. 1.

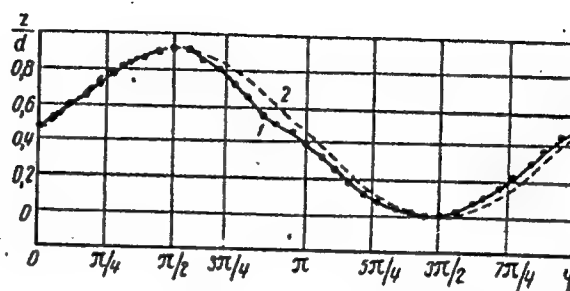


Fig. 2.

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S/126/62/014/006/020/020
E193/E383

AUTHOR: Braynin, E.I.

TITLE: On the problem of residual stresses after deformation
at the yield ledge

PERIODICAL: Fizika metallov i metallovedeniye, v. 14, no. 6,
1962, 940 - 943

TEXT: It has been shown by the present author in his earlier work (FMM, 1961, 11, 451) that low-carbon steels yield to the mechanism which could be described as an avalanche-like, oriented slip. As a result, there is a deflection of the specimen axis at the boundary between the elastically and plastically deformed regions, the angle of deflection α being proportional to the strain at the end of the yield ledge. Further evidence of this effect was obtained, in the first stage of the present investigation, by measuring the angle α between the specimen axis and a fixed direction and plotting it against the distance from the end of the gauge length of the test piece at various stages of deformation within the yield ledge. Apart from demonstrating the deflection of the specimen axis, the results also

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E193/E383

showed that the "kink" in the test pieces, caused by displacement of the plastically deformed region relative to the elastically stressed zone, was straightened by the action of a bending moment that appeared as a result of deflection of the specimen axis. The present author postulated that the residual stresses of the first type should be set up in the test piece as a result of the plastic deformation caused by the "straightening" process. The magnitude of these stresses should increase with increasing bending moment and be inversely proportional to the yield point of the material. In the case under consideration the stresses should, therefore, increase with increasing Lüder's strain (i.e. the strain ϵ_s corresponding to the end of the yield ledge) which, in turn, is proportional to α , and with decreasing yield point σ_s . Since ϵ_s and σ_s for a given steel vary in a similar manner, maximum residual stresses of the first type should correspond to certain optimum values of ϵ_s and σ_s . To check this hypothesis three flat test pieces (130 x 10 x 1.2 mm) of steel 08kп (08kr), with different grain sizes, were extended to produce an elongation ϵ_1

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E195/E383

corresponding to a stress σ_1 . The magnitude of the resultant residual stresses in a surface layer 0.1 mm thick was determined by etching away a surface layer on one side of the specimen and measuring the resultant curvature. The results, reproduced in a table, fully confirmed the theory formulated by the present author. Although complete solution of this problem requires further study, the fact that the residual stresses, set up under conditions described above, can reach the value of 5 kg/mm² should be taken into account in studies of phenomena such as the Baushinger effect, orientation of microstresses of the second type, etc. There are 2 figures and 1 table.

ASSOCIATION: Giproniselektroshakht, Donets

SUBMITTED: May 28, 1962

Card 3/4

BRAYNIN, E. I.

Dissertation defended for the degree of Candidate of Technical Sciences at the Technical Physics Institute imeni A.F. Ioffe in 1962:

"Study of Plastic Deformation of Low-Carbon Steel in the Cheep Limit Region."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

S/020/63/149/004/012/025
B104/B186

AUTHORS: Davidenkov, N. N., Academician, AS UkrSSR (Deceased),
Braynin, E. I.

TITLE: On the problem of the mechanism of plastic deformation of
metals

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 4, 1963,
822 - 823

TEXT: The results of V. I. Shabalin (DAN, 144, no. 3, 551 (1962))
are compared with those of E. I. Braynin et al. (Izv. vyssh. uchebn.
zaved., Chernaya metallurgiya, no. 6, 188 (1950); Izucheniye plasticheskoy
deformatsii malouglerodistoy stali v oblasti predela tekuchesti - A study
of the plastic deformation of a low-carbon steel in the range of the
yield point, Dissertatsiya, L., 1960) and N. N. Davidenkov et al.
(Fiz. met. i metalloved., 11, no. 3, 451 (1961); Fiz. tverd. tela, 1,
no. 9, 1479 (1959)). On the basis of own experiments and an analysis
of results published in the papers mentioned above it is shown that the
conclusion of V. I. Shabalin on the existence of a diffusion plasticity

Card 1/2

On the problem of the mechanism ...

S/020/63/149/004/012/025
B104/B186

in the deformation of steel (iron) in the yield range at room temperature
and common stretching rates is insufficiently founded.

SUBMITTED: December 6, 1962

Card 2/2

BRAYNIN, E.I.; SOLOV'YANOVA, V.V.

Nondestructive testing of the strength of cohesion between a metallized zinc coating and its steel base. Zav.lab. 30 no.4: 457-459 '64. (MIRA 17:4)

1. Gosudarstvennyy institut po proyektirovaniyu i issledovaniyu vzyvobezopasnogo elektrooborudovaniya.

L 16639-65 EWT(d)/EWP(c)/EWP(v)/-2/EWP(k)/EWP(1) Pf-4 AFETR
ACCESSION NR: AP4047663 S/0119/64/000/010/0027/0027

AUTHOR: Braynin, E. I. (Engineer); Kokarev, G. S. (Engineer) B

TITLE: New DSP-2 flaw detector 14

SOURCE: Priborostroyeniye, no. 10, 1964, 27

TOPIC TAGS: flaw detector / DSP-2 flaw detector 28 10

ABSTRACT: The DSP-2 flaw detector, intended for quality control of a 0.05-0.25-mm zinc (electroplated) coating on a 4-mm-thick and heavier steel base, consists of 3 parts: (1) a transistorized microvoltmeter for measuring the potential drop; (2) a multivibrator supplying the coils of an RP-4 polarized relay (chopper) that converts a d-c signal into a 31-cps signal; (3) a switching circuit for calibration, etc. A 4-prong probe is pressed against the test surface; its 2 outer prongs are d-c supplied; the signal is taken from the 2 inner prongs. The signal is applied — via a chopper amplifier and a rectifier — to an M24 micro-

Card 1/2

L 16639-65

ACCESSION NR: AP4047663

ammeter. The claimed error of the instrument is 3%. Orig. art. has:
2 figures.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: IE

NO REF SOV: 001

OTHER: 000

Card 2/2

BRAYNIN, E.I., inzh.; VINNIKOV, I.Ye., inzh.

Flaw detection in the welded joints of electrical contacts.
Elektrotehnika 36 no.6:54-58 Je '65.

(MIRA 18:7)

BRAYNIN, E.I., kand.tekhn.nauk; NADEZHDIN, D.S., kand.tekhn.nauk; SOLOV'YANOVA,
V.V., inzh.; KHOLODKOVA, M.I., inzh.

Bonding strength between a zinc metallization coating and a steel
base. Vest.mashinostr. 45 no.11:30-31 N '65. (MIRA 18:12)

L 12034-66 EWT(m)/EWP(t)/EWP(b) LJP(c) JD
ACC NR: AF5024144

SOURCE CODE: UR/0075/65/020/009/1014/1016

AUTHOR: braynin, E. I.; Pyasetskaya, L. I.

ORG: State Institute for Design and Research of Explosion-Proof Electroequipment,
Donetsk (Gosudarstvennyy institut po proyektirovaniyu i issledovaniyu v zaryvo-
bezopasnogo elektrooborudovaniya)

TITLE: Spectral determination of indium and germanium in lead-zinc concentrates

SOURCE: Zhurnal analiticheskoy khimii, v. 20, no. 9, 1965, 1014-1016

TOFIG TAGS: spectrographic analysis, lead compound, zinc compound, indium,
germanium

ABSTRACT: The lead-zinc concentrates (Pb 2-95% and Zn 5-28) contained (in %) Cu 1, Cd 0.5, Fe 5-10, As up to 5, Sb 1, Cl up to 1, In and Ge 0.002-0.05% each, and traces of Ag and Au. A method was developed for the simultaneous spectral determination of In and Ge in the range of 16 ppm-0.1%, using a single set of standards. The standards and samples were diluted with a buffer mixture, consisting of 52.6% NaCl (for stabilization of arc temperature), 7% Bi_2O_3 (Bi was used as a compari-

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UDG: 543.42

L 12034-66

ACC NR: AP5024144

son element during photometry of spectrograms), and 40.4% charcoal powder (to increase the electric conductivity of the mixture). The spectral lines used were: In I 3256.090 with Bi I 33997.21 as standard; and Ge I 2709.631 with Bi I 2809.63 as standard. The spectrum was excited by the DG-2 generator at an arc current of 8-9 amperes. The powder samples were evaporated from the channel in a carbon electrode (diameter 4 and depth 8 mm), with a distance of 2.5 mm between the electrodes. An exposure of 60 seconds was sufficient to produce a good spectrogram in the spectrograph ISP-30 with a 0.01-mm slit and 3-fold photographing. Shifts in the calibration curves, depending on the relative amounts of lead and zinc, were noted. The standard deviation of values of the spectral analysis was 12 and 17% in the determination of In and Ge, respectively. A satisfactorily good agreement was observed between the spectral and chemical analysis. Orig. art. has: 5 figures.

SUB CODE: 07,20/ SUBM DATE: 02Jun64/ ORIG. REF: 006/

2/2

CC

L 24797-66 EWT(d)/EWP(c)/EWP(v)/T/EWP(k)/EWP(l)/ETC(m)-6 IJP(c)

ACC NR: AP6006952 (N) SOURCE CODE: UR/0381/65/000/006/0009/0015

AUTHORS: Braynín, E. I.; Vinnikov, L. Ya.

ORG: Institute Giproniselektroshakht, Donetsk (Institut "Giproniselektroshakht")

TITLE: Modeling problem in metal defectoscopy on an EGDA integrator by the potential drop method

SOURCE: Defektoskopiya, no. 6, 1965, 9-15
integrator,

TOPIC TAGS: / electric potential, defectoscope, electrode potential, model, steel, metal film / EGDA-9-60 integrator

ABSTRACT: A planar modeling technique was used on an EGDA-9/60 integrator to solve the complex potential drop problem in the determination of defects in metals. Two electrode contact methods were used: a defectoscope with electrodes soldered to the metallic surface at two points; and a defectoscope with a thin metallized film deposit adhering to a thick metallic wall. In the first case, equipotential lines are drawn on the metal surface between the two electrodes with and without defects, and the presence and magnitude of the defects are determined from the ratio of potential drop K, with and without the defect. Similar equipotential lines are drawn between the electrodes of the second defectoscope. To evaluate the sensitivity of the method, the potential drop ratio K is plotted against the

Card 1/2

UDC: 620.179.18

L 24797-66

ACC NR: AP6006952

ratio s_1/L , where s_1 is the distance between adjoining electrode current and potential, and L is the overall distance between the electrodes. The sensitivity is seen to increase as L decreases and s_1 increases. Orig. art. has: 7 figures and 1 table.

SUB CODE: 14, 09/ SUBM DATE: 10Jun65/ ORIG REF: 004

Card 2/2

87

L 42308-66 EWT(d)/EWT(m)/EWP(v)/EWP(t)/EWP(k)/EWP(h)/EWP(l) LJP(c) JD/WR
ACC NR: AP6009259 (A) SOURCE CODE: UR/0122/65/000/011/0030/0031

AUTHOR: Braynin, E. I. (Candidate of technical sciences); Nadszhdin, D. S. (Candidate of technical sciences); Solov'yanova, V. V. (Engineer); Kholodkova, M. I. (Engineer) 45
44
B

ORG: none 21 6

TITLE: Adhesive strength of a metallized zinc coating with a steel base

SOURCE: Vestnik mashinostroyeniya, no. 11, 1965, 30-31

TOPIC TAGS: metal coating, zinc plating, adhesive bonding, solid mechanical property

ABSTRACT: The article reports an experimental study of the long term adhesive strength of metallized zinc coatings on a steel base in a medium of liquid fuel of the kerosene type. A metallized zinc coating with a thickness of 0.05-0.18 mm was deposited on sample plates of Steel 3 measuring 100 x 20 x 4 mm. To obtain samples with different initial degrees of adhesion, the base plates were blasted to three different degrees of perfection before application of the coating. The surface electric resistance was determined at five points on each side of the samples. The mechanical strength of the adhesive bond was tested on band type samples by multiple bending on a Type NG-1-2 apparatus. 16

Card 1/2 UDC: 621.793.7:669.58

L 42308-66

ACC NR: AP6009259

The amplitude of the bending was $\pm 30^\circ$ and the bending radius was 15 mm. The adhesive strength was determined from the number of full bends up to the moment when the coating broke away from the base. Corrosion tests were carried out in a chamber which made it possible to simulate a tropical climate; for about 8 hours each day, the temperature was held at $45 \pm 5^\circ\text{C}$ with a relative humidity of 65-70%, and then for about the same time at 20°C with a relative humidity of 90-100%. The corrosion media were kerosene and water. The tests were run under three regimes: 1) the samples were immersed to a certain depth, so that part of the sample protruded above the surface; 2) the samples were alternately immersed in water (2 hours) and in kerosene (22 hours); 3) the samples were immersed in a two-phase medium, so that the lower part of the sample was in water, and the upper part in kerosene. Tests were made for mechanical strength periodically, 1.5-2, 4.5-5, and 6.5-8 months after the start of the tests. Periodic checks were also made of the electric resistance. The experimental results are shown in a series of curves and tables. It was found that the relative growth of the electric resistance during the corrosion tests was considerably less than the decrease in the adhesive strength of the coatings. Temperature changes exerted very little effect on the adhesive strength. Orig. art. has: 3 figures and 1 table.

SUB CODE: 11, 20/ SUBM DATE: none/ ORIG REF: 001

Card 2/2 *bdh*

ACC NR: AP7002442

SOURCE CODE: UR/0219/66/000/012/0056/0058

AUTHOR: Braynin, E. I.; Vol'fovskaya, M. T.; Kremer, R. A.; Krasnenko, Ye. G.; Khmel', G. P.

ORG: Giproniselektroshakht,
Makeyevskiy Metallurgical Works (Giproniselektroshakht, Makeyevskiy metallurgicheskiy zavod)

TITLE: Hot hardness of the deposited layer of different materials

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 12, 1966, 56-68

TOPIC TAGS: high temperature coating, high temperature alloy, hardness, annealing

ABSTRACT: Bars and plates of type 45 steel were coated with 10 different materials by automatic welding on a U2 machine operating at 500 a, 28-30 v, a feed rate of 100 m/hr, under an AN-20 type flux. The coating thicknesses were 6 and 10 mm corresponding to either two or four welding passes. After coating, samples measuring 45 x 45 x 45 mm were cut for hot hardness testing. Hot hardnesses were obtained at temperatures ranging from 20 to 650°C on a Rockwell instrument by using a conical indenter and measuring the impression at room temperature. The samples were also tempered at temperatures ranging from 300 to 650°C and tested for hot hardness at the same temperatures. The relative error in measuring the impression was 1%, while the temperature of hot hardness testing did not vary by more than 15°C. The chemical compositions of

UDC: 621.791.92:620.178.152.342.42

Card 1/2

ACC NR: AP7002442

the coating materials are given; these were high temperature steels containing high carbon contents (0.72-3.10%) and alloyed with Si, Mn, Cr, W, Ni, V, and Ti. Hot hardness data were given as a function temperature, before and after tempering, for the 6 and 10 mm coatings. At 20°C all of the materials had a high hardness (R_c 50-60). As the temperature increased the hardness decreased, especially at about 500°C. The hardness value above 500°C was an indication of the red hardness of the coating materials. After tempering, some materials such as 5Kh4V3FT, 5Kh4V3FTs, U20Kh17T, and U20Kh17T1 dropped in hot hardness to as low as 32-40 R_c at 650°C. The two steels U30Kh25N4S4V8 and U25Kh23N4S3G were the most resistant to tempering. The following are listed in decreasing order of hot hardness and tempering resistance: U30Kh25N4S4V8, U25Kh23N4S3G, 3Kh2V8, Kh12VF, U20Kh17T1, U20Kh17T, 5Kh17T, 5Kh4V3FT, 5Kh4V3FTs, and 5Kh4V3F. Orig. art. has: 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002

Card 2/2

CO

9

PRODUCTION OF HADFIELD STEEL BY BLENDING BESSEMER STEEL WITH FERRO-MANGANESE MELTED IN A CUPOLA FURNACE. J. L. TRAINING. *Metallurg* 8, No. 6, 21-7 (1933).—Fe-Mn was melted in a cupola furnace by using the blast as little as possible and then mixed in a ladle with the converter steel. Satisfactory results were obtained if Fe-Si was added to the converter charge to raise the temp. of the steel.

H. W. RATHMANN

ASME-STEEL METALLURGICAL LITERATURE CLASSIFICATION

1. S. Brinin and E. Gaikov, *Metallurg* 9, No. 3, 247 (1914). A study of 2 heats of steel (28 and 45 tons) showed 7.00 and 13.00 kg. S, resp., added to the bath from the gas. The ratio $\text{CaO} \cdot \text{SiO}_2$ in the slag was approx. 2 and the S in the steel 0.05 and 0.07%. No analysis of the gas is given.

H. W. Rathmann

ASB-11A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
COMMON ELEMENTS										COMMON VARIABLE INDEX									
<p>12</p> <p>1 2</p> <p>The Influence of Rolling on the Strength Properties of Unalloyed Steels. J. Bragijn and K. Baranow. (Stal, 1933, vol. 7, pp. 73-81; Stahl und Eisen, 1936, vol. 56, Apr. 23, pp. 493-495). The results of tests to determine the effect of the degree of hot-rolling on the tensile strength, yield point, elongation, reduction of area, and notch toughness in relation to the primary structure are recorded. The experiments were made on two basic open-hearth steels containing approximately carbon 0.5%, silicon 0.34%, manganese 0.75%, and sulphur 0.035%; but whereas one contained 0.025% of phosphorus, the other contained 0.050%, which led to considerable differences in the dendritic segregation.</p> <p>ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									

LIT AND INFO GROUP										PROCESS AND PROPERTIES INDEX										MATERIALS INDEX									
S																				7									
<p>Production of an Experimental Lot of Manganese Sheet Steel. J. Brainin and F. Grigorier. (Stal, 1936, No. 8, pp. 22-31). The authors describe the results of eleven trial heats of manganese steel for shipbuilding, made in the Stalino Metallurgical Works, and make a number of suggestions concerning further production. (In Russian).</p>																													
<p>ASIA-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																													
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18

Quality of Boiler and Firebox Steel. I. Braun and S. Iofin.
(Stal, 1930, No. 11, pp. 81-94). The authors describe the production of boiler and firebox steel at the Stalin Metallurgical Works, and discuss possible modifications in the conditions of acceptance of these steels. (In Russian).

04

9

THE PRODUCTION OF INGOTS FOR THE MANNESMANN PROCESS AT THE STALIN IRON WORKS IN DONBASS. I. BRAUN AND I. AIZIKOVICH. *Metallurg* 12, No. 3, 41 (1938); *Chem. Zentr.* 1939, I, 2250. Charging and smelting procedure in a 100-metric-ton Martin furnace, deoxidation and quieting of the bath, casting of the ingots, heating and rolling, material rejected in the grading, and the macro- and microstructures of the finished pipes are reported. There was less waste (rejected material) in pipes produced from quiet steel than for those cast from an unquiet bath. In order to obtain a fine grain about 0.1% Al must be added in the ladle for the deoxidation of the steel. The grain size depends on the addn. of Al and on the type of smelting procedure employed, which must be such as to assure a completely deoxidized steel. M. G. Moore

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS										1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
MATERIALS INDEX										PROCESSES AND PROPERTIES INDEX										MATERIALS INDEX									
5																				(7)									
<p>Inverse Segregation Phenomena in the Upper Part of an Ingot. I. Braynin and P. Oksyuzov. (Stal, 1939, No. 3, pp. 48-52). (In Russian). As a result of investigations of sections through medium-carbon steel by means of Baumann prints, microscopical examination and carbon, sulphur and phosphorus determinations, the authors were led to the conclusion that the inverse segregation in the upper part of an ingot develops in the process of the solidification of the metal in the region of the shrinkage cavity as a result of the residual melt being sucked downwards. The depth of the inverse-segregation zone depends on the size and shape of the ingot. The spots of inverse segregation depend, other conditions being equal, on the duration of the solidification of the residual melt, and consequently on the carbon content of the steel; the inverse segregation increases with an increase in the carbon content. A zone of direct segregation is situated below the region of inverse segregation.</p>																													
<p>ASME-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																													
<p>1ST AND 2ND ORDERS</p>																													
<p>3RD AND 4TH ORDERS</p>																													

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<p>Brainin, I., and Brushchenko, T. METALLOGRAPHIC METHOD OF IDENTIFYING EXOGENOUS NONMETALLIC INCLUSIONS IN STEEL. <i>Zavodskaya Lab.</i>, 10, (1941). In termination of nature of exogenous inclusions in cast and wrought steel and the preparation of specimens are discussed. Inclusions studied are: semiacid chamotte brick, chamotte clay, sand, etc. Mineral composition is given. Specific action of etchants on components of these inclusions and check experiments are mentioned.</p>																																																																																																							
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PROCESSES AND PROPERTIES AND

The abrasion resistance of Cr-Ni-P cast iron. I. Hralnia and A. Turunov. *Trudy Donsk. Ind. Inst.* 1941, 75-81; *Khim. Referat. Zhur.* 4, No. 9, 99(1941).— Cast Fe contg. C 3, P 0.35-0.75, Cr 0.15-0.60 and Ni 0.15-0.30% was tested for resistance to abrasion on a Mohr and Federhal app. The resistance to abrasion increased with the increase in the content of Cr and P. The effect of 0.2-0.4% of Ni was insignificant. The resistance to abrasion of Cr-Ni cast Fe was 2.11 times greater than that of P cast Fe. Heat-treatment (quenching from 800-850° and tempering at 450°) increased the resistance to abrasion of Cr-Ni cast Fe 2.4 times.

W. R. Henn

9

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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RECORD #10

RECORD #11

RECORD #12

RECORD #13

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